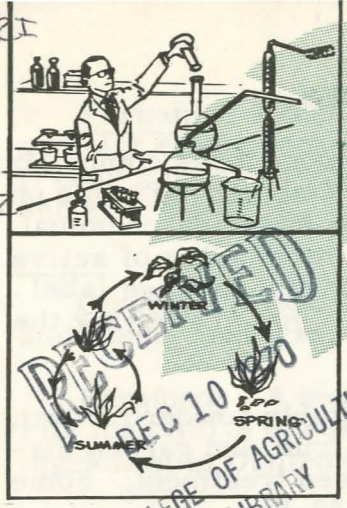
1959

EC59-1832 Plant Diseases : Facts about Chemicals

John L. Weihing



E.C. 59-1832

PLANT DISEASES

JOHN L. WEIHING
Extension Plant Pathologist

facts about CHEMICALS

1. Most chemicals used for plant disease control are for the control of fungus diseases and, hence, are called "fungicides".

2. Essentially, all of the fungicides are protectant type chemicals. They do not kill out existing infection but protect the plant against infection.

3. No one fungicide can be used for control of all diseases. A fungicide may control a number of different diseases, however.

4. It is necessary to cover the plant thoroughly with the fungicide in order to obtain satisfactory control. Better coverage of the plant can be obtained by sprays than by dusts.

5. A wetting agent such as a common household detergent (Vel, Dreft, Tide, Duz, All, etc.) should be added to the spray solution so that it will not run off the plant as droplets but will spread and thoroughly wet the foliage. Add one teaspoonful of detergent per gallon of water.

6. Fungicide applications should start before the disease occurs since the fungicide will only protect against the disease (as mentioned in 2). Once a disease has become established it is difficult to check.

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THE FUNGICIDES

The following chemicals are among those commonly sold as fungicides. Rarely is the commercial name on the can or package the same as the fungicidal chemical. The fungicide(s) is listed under the heading of active ingredients which will be found on the package label. It is here where you look to see if you are buying the right product.

Captan - A cream colored wettable powder or dust. Used for a variety of ornamental fruit and garden diseases and also extensively as a seed treatment. Some trade names: Orthocide, Captan 50-W.

Copper - There are a number of different copper containing fungicides - Bordeaux mixture (made up of copper sulfate, lime and water), basic copper sulfate, copper oxides, copper carbonate, copper Naphthenate and copper dusts. These compounds are blue wettable powders or dusts used for ornamental fruit and garden diseases.

The copper compounds are among the oldest employed fungicides. They have a broad disease control spectrum. Unfortunately, they are quite caustic to spray equipment and also tend to injure or retard plant growth under cool, moist conditions. In recent years many new synthesized fungicides have been replacing copper because they are easier to handle and cause less plant damage.

Cycloheximide - A white, wettable powder or tablet. Controls certain lawn diseases, cherry leaf spot and is particularly good for control of rust and mildew diseases. Sold as Acti-dione and Actispray.

Cyprex - A white wettable powder which is new on the market. It has shown excellent promise for control of a number of fruit, vegetable and ornamental diseases. Cyprex is the commercial name. Dodecylgluanidine acetate is the active ingredient.

Dichlone - A yellow, wettable powder which is used for control of some fruit and ornamental diseases but is more commonly used as a seed treatment.

Ferbam - A black, wettable powder or dust. Especially effective for the control of cedar apple rust. It does a good job of controlling a number of leaf blight and spot diseases.

Glyodin - A liquid fungicide for control of apple scab and cherry leaf spot. Sold as Crag Fruit Fungicide 341.

Karathane - A brown wettable powder which is primarily for control of powdery mildew diseases. The active ingredient is Dinitro (1-methyl heptyl phenyl crotonate).

Maneb - A white wettable powder or dust. Used primarily for control of tomato and potato diseases but has much value as a general fungicide. Commonly sold as Manzate, Manzate 75, Dithane M22.

Mercury - Mercuric chloride, phenyl mercury acetate and related organic compounds. These are highly caustic compounds occasionally recommended as eradicant fungicides. They are quite likely to cause plant injury if not used properly.

Mildex - A yellow wettable powder used specifically to control mildew diseases. Dinitro capryl phenyl crotonate is the active ingredient.

Nabam - An amber, water soluble liquid. Usually Nabam is mixed in the spray tank at the rate of 2 quarts plus 1 lb. of zinc sulfate and 100 gal. water. This results in the formation of Zineb (see below). Nabam is sold commercially as Dithane D-14 and Parzate Liquid Fungicide.

Sulfur - Sulfur and compounds of sulfur have been used extensively as fungicides since 1850. Liquid-lime sulfur and dry-lime sulfur are used as dormant sprays on fruit trees. Wettable sulfurs are commonly used for control of fruit tree diseases. Sulfur dusts control most rust and mildew diseases.

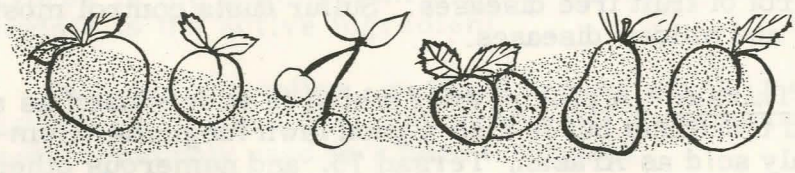
Thiram - A pink powder which is widely used as a seed treatment but is also a good lawn fungicide. Commonly sold as Arasan, Tersan 75, and numerous other commercial names.

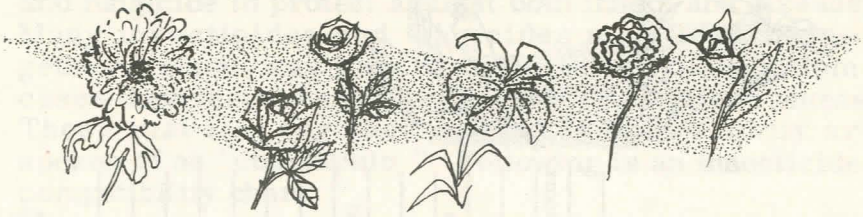
Zineb - A tan wettable powder. A general fungicide which has been receiving wide usage in recent years. Commonly sold as Parzate and Dithane Z-78.

Following is a listing of the more common diseases of fruits, flowers and vegetables. Those chemicals that may be used for their control are checked (X).

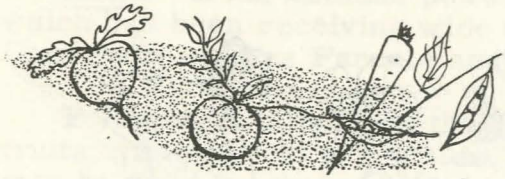
DISEASES	CAPTAN	CYCLOHEXIMIDE	COPPER	CYPREX	DICHLONE	FERBAM	GLYODIN	KARATHANE	MANEB	MERCURY	MILDEX	NABAM	SULFUR	THIRAM	ZINEB	
Fruit																
Apple - Cedar apple rust						X							X		X	
Black rot	X					X	X						X			
Scab	X			X		X	X						X			
Apricot - Scab	X												X			
Brown rot	X												X			
Cherry - Leaf spot	X	X	X			X	X									
Powdery mildew		X						X			X		X			
Brown rot	X															
Grape - Downy mildew			X													
Powdery mildew								X			X		X			
Peach - Leaf curl			X										X*			
Brown rot	X				X								X			
Scab	X												X			
Pear - Scab	X				X								X			
Plum - Brown rot	X				X								X			
Raspberry - Anthracnose	X					X							X*			
Cane blight	X					X							X*			
Strawberry - Leaf spot	X		X			X										
Fruit rots	X															

* Concentrated for dormant spray



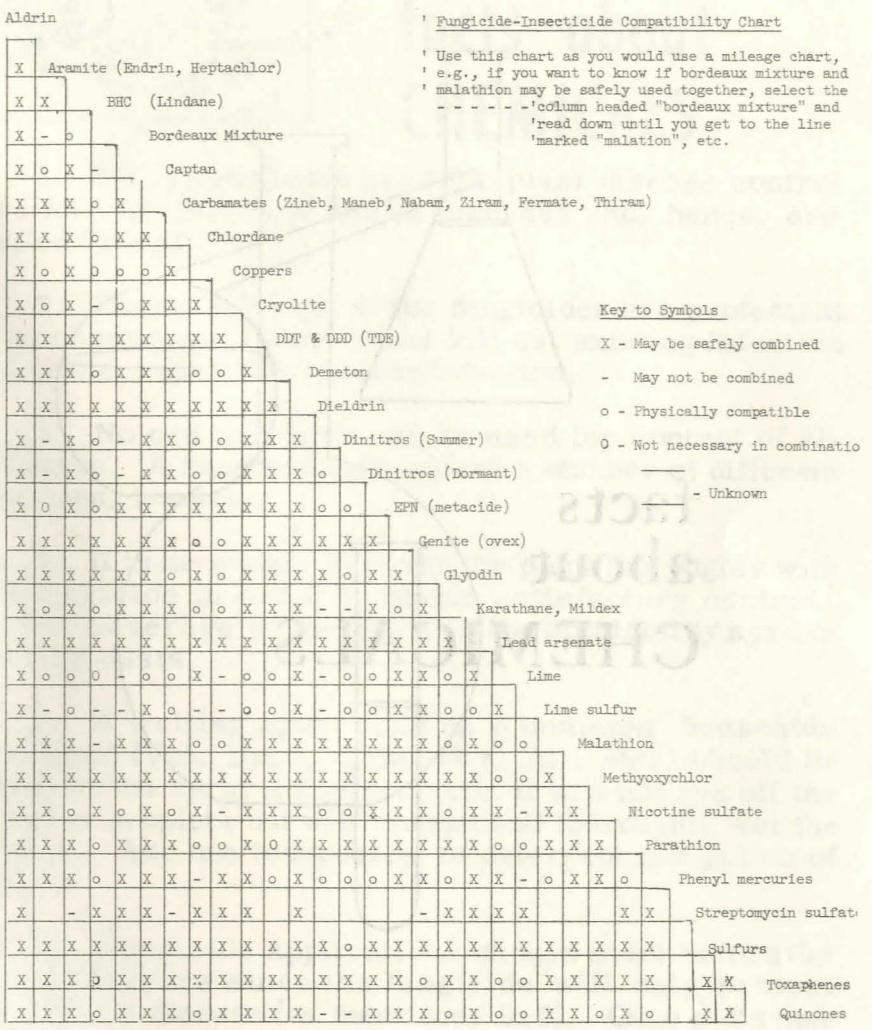


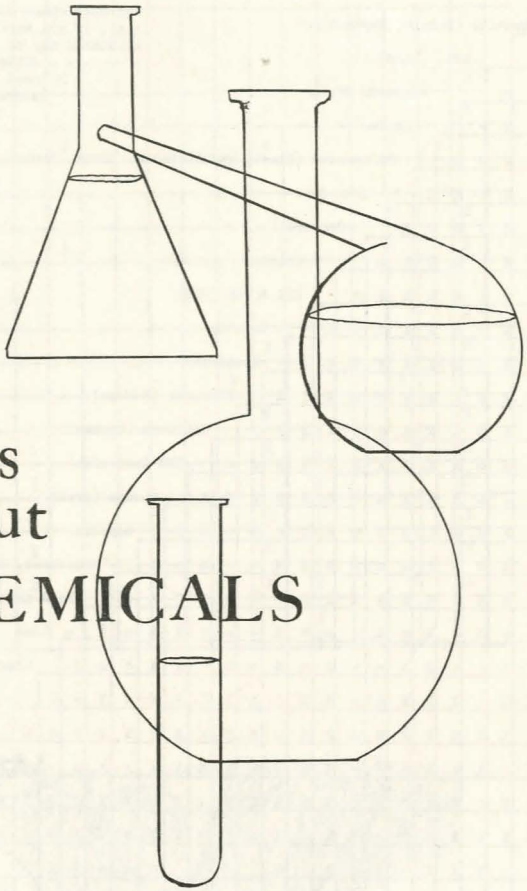
DISEASES	CAPTAN	CYCLOHEXIMIDE	COPPER	CYPREX	DICHLORE	FERBAM	GLYODIN	KARATHANE	MANEB	MERCURY	MILDEX	NABAM	SULFUR	THIRAM	ZINEB	
Flowers																
Aster - Leaf spot			X												X	
Rust															X	
Carnation - Blight	X														X	
Bud rot	X														X	
Leaf spot	X		X												X	
Rust	X					X									X	
Chrysanthemum - Leaf spot	X														X	
Powdery mildew								X			X		X			
Dahlia - Powdery mildew								X			X		X			
Delphinium - Powdery mildew								X			X		X			
Hollyhock - Rust						X							X		X	
Iris - Leaf spot	X		X												X	
Lily - Grey mold	X					X									X	
Peony - Botrytis blight			X			X									X	
Phlox - Leaf spot						X							X			
Powdery mildew								X			X		X			
Rose - Black spot	X		X	X		X			X						X	
Powdery mildew		X						X			X		X			
Rust		X				X							X			
Snapdragon - Rust						X									X	
Sweet Peas - Anthracnose						X							X			
Powdery mildew								X			X		X			



Disease	CAPTAN	CYCLOHEXIMIDE	COPPER	CYPREX	DICHLONE	FERBAM	GLYODIN	KARATHANE	MANEB	MERCURY	MILDEX	NABAM	SULFUR	THIRAM	ZINEB	
Vegetables																
Beet - Leaf spot			X												X	
Cantelope - Anthracnose	X								X						X	
& Cucumber - Downy mildew			X						X							
Scab	X															
Carrot - Leaf spot															X	
Celery - Blight			X												X	
Eggplant - Blight & Fruit rot															X	
Onion - Purple blotch									X						X	
Pea - Powdery mildew								X			X		X			
Potato - Early blight									X						X	
Late blight		X							X						X	
Rhubarb - Leaf spot		X													X	
Tomato - Leaf spot		X							X						X	
Late blight		X							X						X	
Anthracnose		X							X						X	
Watermelon - Anthracnose			X													

Many times you may wish to mix an insecticide and fungicide to protect against both insect and disease. Many insecticides and fungicides may be mixed together without any loss of their activity but in some cases they react chemically and lose their effectiveness. Those that mix together without loss of activity are spoken of as "compatible " Following is an insecticide-compatibility chart.





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